MULTIMEDIA UNIVERSITY

STUDENT ID NO

Table No.	

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2019/2020

PDS0101 – INTRODUCTION TO DIGITAL SYSTEMS

(All sections / Groups)

28 FEBRUARY 2020
9.00 AM – 11.00 AM
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 7 pages including cover page with 5 Questions. Please attempt **ALL** questions.
2. The total marks for this paper is 50 marks.
3. Please print all your answers in this booklet.

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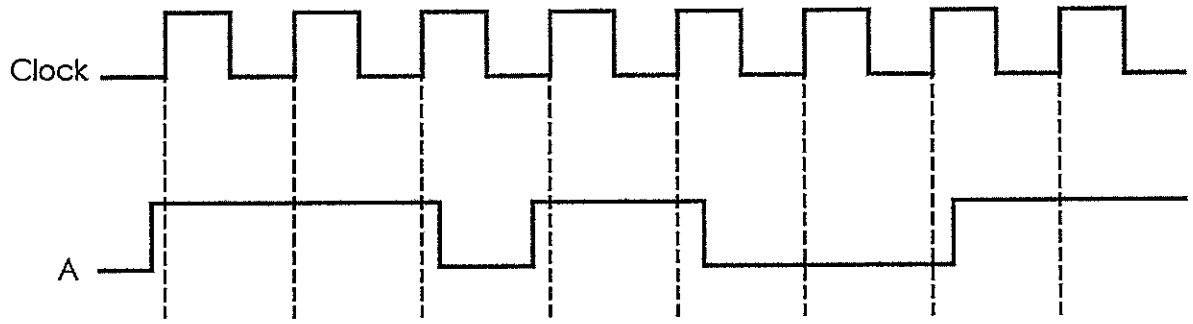
QUESTION 1

a) Referring to the waveform A shown below, answer the following questions. [4 Marks]



i. Determine whether the waveform A is periodic or non-periodic. State your reason.
ii. Indicate the sequence of bits transferred if a bit is read upon the clock's rising edge.
iii. What is the time required to send one (1) bit if given the reference clock is running at 200KHz? The measurements are in microseconds.
iv. Calculate the total time required the send the bits you determined in (ii).

b) Convert Hexadecimal Number B6D3 to the following number systems. [3 Marks]

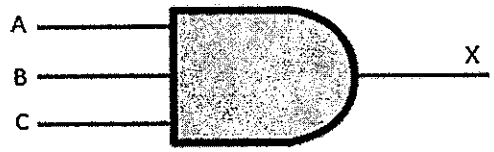
i. Binary
ii. Octal
iii. Decimal

Continued .....

c) Perform the calculation of $(1B)_{16} - (47)_8$ using 8-bits signed 2's complement binary numbers and provide your answer in decimal. [3 Marks]

QUESTION 2

a) What is the name of logic symbol below? [1 Mark]



b) Determine the total number of possible input combinations for logic symbol in question (a). [1 Mark]

Continued .....

c) Develop the truth tables and construct the timing diagrams based on logic symbol in question (a). [8 Marks]

QUESTION 3

a) With Boolean algebra rules, prove that $A + \bar{A}B = A + B$. [4 Marks]

Continued .....

b) Simplify this equation with Boolean algebra rules.

$$(\bar{A} + AB) + (\bar{B}(C + D))$$ [6 Marks]

QUESTION 4

a) Convert X = BC + AC + AB to standard SOP. [2 Marks]

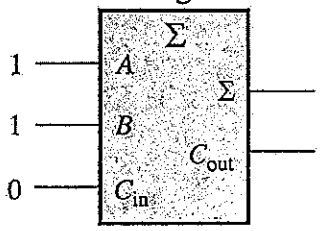
b) Draw truth table based on your answer in (a). [4 Marks]

Continued .....

c) Use K-map to simplify the Boolean expression obtained in (a) (in standard SOP format).

[4 Marks]

d) What is the Sum and C_{out} value of the following Full-Adder? [2 Marks]

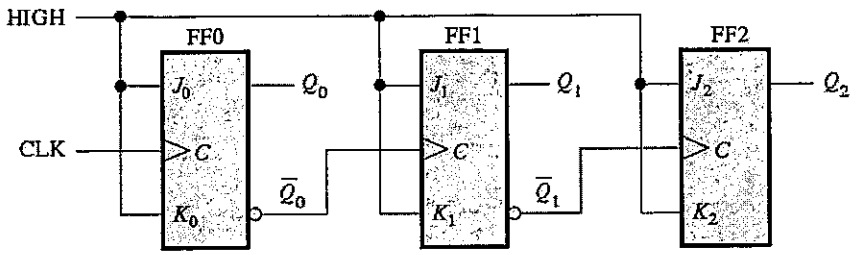


QUESTION 5

a) Explains the difference between latch and flip-flop. [1 Mark]

b) Explains the differences between SR flip-flop and JK flip-flop. [1 Mark]

Continued .....



Answer:

d) Draw circuit diagram for Serial In/Parallel Out by using D Flip-flops. [2 Marks]

End of Page.